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Explorations in AlphaWorld: The Geography of 3-D Virtual Worlds on the Internet

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Abstract

In this paper I will examine the geography of one particular type of virtual reality - *virtual worlds*. They are publicly available on the Internet and are designed for social interaction in real-time. The two key elements of these systems that move them beyond conventional computer-mediated communication channels into the realm of virtual reality are the shared graphical environment in which interaction takes place and the use of avatars to represent participants. The *AlphaWorld* virtual world is used as a case study. I describe both the social and physical geography of AlphaWorld, highlighting the particular characteristics of this type of virtuality and how it is being used by a distinct community of inhabitants.

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Introduction

In this paper I am not so much concerned with the use of virtual reality (VR) *in* geography, rather I want to explore the geography *of* VR. This has received little attention from academic geography.[1] I have chosen to focus on one particular VR system known as AlphaWorld. I hope that exploring the social and physical geography of AlphaWorld will be revealing for wider notions of the geography of virtual reality.

AlphaWorld is one of a number of commercially developed VR systems that are publicly available on the Internet. The aim of these systems is to create a graphical environment that can be shared by groups of people for real-time social interaction (known colloquially as "chatting"). They are variously described as multi-user worlds, networked virtual reality (Schroeder 1997), metaworlds (Rossney 1996), avatar worlds (Damer 1997), many-participant online virtual environments (Morningstar & Farmer 1991), inhabited digital space (Damer 1996), shared worlds (Roehl 1997). In this paper I refer to these commercial systems simply as *virtual worlds*. They are expressly designed as social spaces that are in some senses fun and easy to use. Also, they are accessible VR in they can be used on ordinary home PCs and phone lines without the any fancy equipment often associated with "proper" VR.

We will begin by defining virtual worlds, their unique characteristics and antecedence. The main part of the paper examines, in some depth, the particular characteristics of one of these - AlphaWorld. For those who are interested in the other virtual worlds you may like to consult the book *Avatars! Exploring and Building virtual worlds on the Internet* (Damer 1997), written in a populists travel-guide style. To give you an idea of the type imagery and metaphors being employed the names of some of the other systems are - Community Place, V-Chat, InterSpace, Worlds Chat, WorldsAway, The Palace, Deuxième Monde and CyberGate.

Defining Virtual Worlds

In many respects virtual worlds can be seen as a obvious enhancement to the widely used text-based Internet chat services and MUDs by providing a visual and tangible "physical" interface for social interaction using 2-d, 2.5 or fully 3-d graphical environments. Much as Web browsers provided an attractive, easy to use graphical interface to the largely textual information of the Internet, so it could be argued virtual worlds are just visual interfaces to popular Internet pastime of real-time chat. Taking this type of definition, virtual worlds could

easily be dismissed as they share "*the features that make chat rooms so paralyzingly banal … and wed them to the empty eye-candy of the videogame.*" (Rossney 1996). However, I would argue that the virtual world phenomena is greater than the sum of its parts (chatting + 'eye-candy') for a number of reasons.

Firstly, the social spaces that the virtual world provide are being actively used and, to varying degrees, modified by the participants themselves. This sense that they are interactive environment that can be shaped by user's activities and interactions is crucial. The participants can define the parameters of their environments and experience (Morningstar & Farmer 1991). In this fashion cold, inhumane digital spaces of VR are rendered into places that have meaning and the virtual world users become inhabitants, owners, citizens, developing a very real sense of belonging. This is particularly so with AlphaWorld where users are able to 'own' land and build homesteads, thereby constructing their own places for social interaction. This 'homesteading' facility of AlphaWorld was a conscious part of the design of the software and is unique amongst competing commercial Internet virtual worlds. It has been enthusiastically grasped by many of thousands of people since AlphaWorld was opened.

The graphical environments themselves offer more than just an interface. They provide a genuine sense of geographic space, with the freedom to move in different directions, and feelings of physicality. Bruce Damer, a virtual worlds evangelist, comments that the development of these system is significant because at last "*there was 'space' in Cyberspace and 'visiting a place on the Internet' began to have real meaning"* (Damer 1996, page 1). The fact that virtual worlds are trying to provide concrete spatial environments should make them of greater research interest to the academic disciplines that have a focus on use and configuration of space - geographers, planners and architects.

The other significant element of virtual worlds is the way the participants are represented and made visible to each other. A graphical object known as a *avatar* is used as a totem, projecting a tangible sense of self into the space. Avatars are able move, manipulate objects, talk to each other and make gestures. The word avatar comes from the Sanskrit language and can be translated as *"God's appearance on Earth"* and it was first used in the context of virtual worlds in the pioneering Habitat system of the late 1980s (Morningstar & Farmer 1991) and popularised by Neal Stephenson's 1992 science-fiction novel *Snow Crash*. Reid describes

them thus, "*Avatars, the colonists of the virtual frontier … A 'real' person's proxy, puppet or delegate to an online environment, an avatar can be a faithful representation of its master or (more commonly) a fanciful one.*" (Reid 1997, page 197). The avatar is important for representation and identity formation in virtual worlds (Suler 1997, Jeffrey & Mark 1998) and will be discussed in more detail later.

I like to think of virtual worlds as hybrid places, not truly real like our material surroundings and, yet, also not completely virtual like as other digital space (e.g. email, Usenet, the Web). Virtual worlds are in between, being virtual as they only exist in the digital form in computer memory but trying to provide the tangible structures of real places in the familiar forms like houses, gardens, ground and sky. This virtual 'physical' environment, with varying degrees of realism, attempts to simulate characteristics of real-world places in the hope of making the online experience less virtual and more naturalistic, therefore more enjoyable and fulfilling. And yet, because of technical limitations or conscious design decisions, the virtual world simulation of real places is still markedly different than the material world. For one thing the realism of the graphics rendering has to be limited because of the Internet's capacity and social interaction is constrained by the keyboard and screen. Of particular interest are the conscious decisions of the programmers and designers to warp and even transcend the conventions of the real-world. This is most evident in terms of movement, with participants being able to fly, teleport or walk through walls.

Virtual worlds, much like their text-based MUD forebears, can appear to the outside observer as a strange, ephemeral and unreal places of fantasy. However, upon closer examination it can be seen that the participants in the virtual worlds are engaging in very real communication, albeit strange in form and context. They are re-forming existing and constructing new modes of interaction and personal identity to suit the 'reality' of the places available in virtual worlds (Schroeder 1997). From the outside it may appear ephemeral and unreal, but to the participants it imbues a powerful reality and sense of belonging. From a geographical point of view the study of these systems is interesting because of the how the social environments and the built environment combine to create a virtual place. Research is needed to consider how the design of the built-form (both of the space and the software interface), the technical operation of the system and the social management shape the activities and communities that form within the virtual worlds (Donath 1997, Huxor 1997, Schroeder 1997).

What were the antecedence of these virtual worlds systems? There are two major antecedents - text-based, synchronous conferencing systems and computer games. Text-based systems, encompassing MUDs, MOOs, IRC, ICQ and chat-rooms, have a long and varied history. Their characteristics and usage have been well studied by social scientists (see for example Reid 1991 & 1995, Rheingold 1994, Turkle 1995, Curtis 1996, Rafaeli et al 1998). The crucial element of all these systems has been that they enable genuine social interaction between real people in real-time using ordinary PCs. This interaction in turn leads to the formation of so called virtual communities (Rheingold 1993, Garton *et al*. 1997). Although the interface to these systems are limited to text communication, this does not seem to have hindered too greatly peoples ability to reach out and interact with others through this medium.

The first virtual world system was called Habitat and it fused together a graphical interface with avatars and a game-style MUD environment (Morningstar & Farmer 1991). It was a genuine pioneering effort, developed with the limited home computers of the late 1980s (the Commodore 64), and is really the progenitor of today's Internet virtual worlds. The creators described their system as:

> *"A far cry from many laboratory research efforts based on sophisticated interface hardware and tens of thousands of dollars per user of dedicated computing power, Habitat is built on top of an ordinary commercial on-line service and uses an inexpensive - some would say "toy" - home computer to support user interaction. In spite of these somewhat plebeian underpinnings, Habitat is ambitious in its scope"* (Morningstar & Farmer 1991, page 273).

In many ways this description could apply to the Internet virtual world systems today, in that they aim to be accessible to the average Internet user, yet have the ambitious goal to provide the space and conditions for communities to grow. Significantly, I would argue that virtual worlds draw much less from the experience of the mainstream virtual reality field (what I like to think of as the 'SGI and goggles' brigade). The key goals in the development and deployment of these virtual worlds have been sociability and entertainment, rather than rendering algorithms or realistic visualisation.

The other key antecedent of virtual worlds has been computer games. The rapid development in computer games technology in terms of the quality of their graphical interfaces and the immersiveness of their gameplay in the last ten to fifteen years has been considerable (Haddon 1993, Herz & Pietsch 1997). The computer games market is driven by fierce commercial pressures to deliver exciting new products that run on affordable home computers. Some of the most influential games are the simulation and strategy ones like SimCity (Macmillan 1996), adventure games such as Myst and Ultima (Carroll 1997, Kim 1998) and, in particular, the 3-d first-person action games with DOOM (Riddell 1997) and Quake (Gifford 1996, Breeze 1997) being the best exemplars. In many respects the virtual spaces of the best of these networked games are more sophisticated than virtual worlds, and they are certainly deserving of serious study in their own right by geographer and other social scientists.

AlphaWorld as a Case Study

I will focus on one particular Internet virtual world called AlphaWorld. It is a massive virtual realm that has been visited by over two hundred and fifty thousand people since its inception in the summer of 1995 and many of them have actually constructed a large, complex city at its centre. It has a realistic three-dimensional environment and **figure 1** shows typical views of this, with buildings, trees and other users, represented by their avatars, walking around. AlphaWorld is a first-person perspective virtual world in that you see through the eyes of your avatar; as you move your avatar, so your view of the world changes (although it is also possible to view yourself in third person as well).

AlphaWorld is owned and managed by Circle of Fire Studios, Inc, a small firm based in Newburyport, MA., USA and their homepage is at http://www.activeworlds.com/. Their system is called Active Worlds, and it a comprises a “universe” of around three hundred different worlds operated by themselves or licensed to other individuals, universities and companies. Each world is a really just a piece of server software with a unique name. While they are all based on the some server system they each have different characteristics and visual styles. Some of the worlds are used as virtual versions of real places like Yellowstone national park or planet Mars, while others are for marketing purposes, for example promoting major movies (such as Godzilla, X-Files). There are also worlds for different languages and religions. Russian and Scandinavian language worlds are particularly popular.

AlphaWorld is one of the worlds in this Active Worlds 'universe'. However, it is special because it was the first and it is still the largest, most developed and most populated. It is this world that I will describe in detail in this paper.

There are a number of reasons why AlphaWorld makes a good case study:

- it is one of the most technically sophisticated virtual worlds, with a realistic 3-D environment and avatars,
- it has many small, but active communities,
- it has many social activities, including the "classic" example of a virtual wedding[2], as well as classes in building, contests for the best homestead, prayer meetings and guided tours,
- it is probably the most popular virtual world system (although reliable usage figures are difficult to gather),
- it enables users to design and build the 3-D environment themselves,
- it has detailed recorded history[3].
- its urban geography has been mapped in detail (see **figures 2 & 3**),
- a wide array of community information is available, for example on the Web and via active newsgroup discussions,
- you can try it out for free (although the software only runs on Windows95/NT and you need to pay a citizen registration fee to gain access to all facilities),
- it has been studied by several social scientists using participant observation (Schroeder 1997, Jeffrey & Mark 1998).

In technical terms, the system operates on a client-server basis. An Active Worlds server (running on NT, Solaris or Linux platforms) stores all the details on the world, such as the characteristics and location of all built objects likes houses and trees, and acts as a central hub to share real-time information on what the users are doing in terms of moving their avatars and talking. Users access the world with the client software called the ActiveWorlds browser which can be downloaded for free from http://www.activeworlds.com/ (around 2 meg in size) and is available only for Windows 95/98/NT machines. The top left picture in **figure 1** shows the current interface of the browser, with its three key components being the large 3-d viewing window, the text-chat interface at the bottom and the control panels on the left-hand side. The browser provides the essential elements that enables people to inhabit the virtual world - the 3-

d view, the tools to move the avatar and the ability to conduct text ‘conversations’ with other people. As you move around the world, the browser downloads from the server the 3-d environment and avatar activity in your immediate neighbourhood. The 3-d environment is made of individual building blocks (like wall panels, doors, trees, chunks of road, etc) which are streamed as you move and then cached by the client. The blocks themselves are in Renderware format, rather than the more standard VRML. The use of streaming, caching and object compression make for a realistic and usable 3-d environment that runs happy on affordable PCs and typical network speeds.

The Space of AlphaWorld

AlphaWorld comprises a massive virtual space which is undergoing concerted urban development. It was opened to Internet general public on the 28th of June 1995. This date marks the beginning of sustained colonisation, with tens of thousands of people leading a virtual land-rush to claim the *terra nullius* of AlphaWorld. The virtual space came into existence as a flat, featureless plain stretching for thousands of virtual kilometres in every direction, coloured a uniform shade of green to signify it as virgin territory waiting to be claimed. There are no “natural” features, no mountains or rivers, just a perfect green plain sheltering under a unceasing bright blue sky. There is no weather or wildlife. For geographers, an obvious comparison can be drawn between space of AlphaWorld and the isotropic plain used in early models of settlement patterns. This world would also be the true dream of the flat earth advocates of old! Everything that now exists in AlphaWorld, over 25.2 million objects as of June 1998, has been placed there by the human inhabitants (Vevo 1998). Of course, the reality is that the virtual expanse of AlphaWorld, with all its urban development, is simply a large server database, around 1.4 gigabytes in size in June 1998, running on a anonymous server machine somewhere in the Boston area of the USA. It is only exists in Cyberspace, but can be accessed from anywhere with an Internet connection.

So, how big is AlphaWorld? The total area of the flat plain is exactly 429,038 square kilometres, which is some forty-three percent larger than the United Kingdom. Unlike the UK, the borders of AlphaWorld are dead straight, forming an exact square of land 655 kilometres on each side. A Cartesian co-ordinate system is used to delineate space in AlphaWorld with an origin point in the dead centre of the world at 0,0. This centre point is known as Ground Zero (GZ) to the locals and is the focal point for the world because when people enter this is the

location at which they arrive. Consequently, the area around Ground Zero is always the most densely populated. When people give addresses in AlphaWorld they use co-ordinates such as *67N, 42W* which translates to 670 metres north and 420 metres west of GZ. It is interesting that people know and use co-ordinates of their homesteads, rather than house numbers and street names. In the real-world the only people who are likely to know the location of their house in terms of co-ordinates are surveyors.

The inhabitants of AlphaWorld have been busy claiming land and building all manner of structures from modest suburban-style homes to grand castles (I discuss how it is possible to build in detail later). Since the world opened in 1995 over a quarter of a million people have visited and about thirty thousand of these have built something. However, the activity of these thirty thousand has made little impact on the vast expanse of AlphaWorld, despite their best efforts. **Figure 2a** is a map of the whole of AlphaWorld showing the density of urban development as of late February 1998. The most heavily built-up areas on the map are represented by the brightest pixels. The end result looks very much like the satellite photographs of the Earth taken at night where the major cities and conurbations are identified as bright area caused by all the light escaping into space. From **figure 2a** it is clear the most developed area of AlphaWorld is the densely built city around GZ in the middle of the image, which sprawls out in all directions for about fifteen kilometres. Ribbons of urban growth project out from this city along the principle compass axes to form a distinctive star shape. Towns and other small settlement lie along these axes, looking like bright beads strung along a necklace. The spatial structure of urban development is largely the results of the power of the co-ordinate system as a form of addressing in AlphaWorld. Human nature means people like to choose regular and memorable co-ordinates, such as 50N, 50W or 1555E, 1555S as the location for their homestead. Once a pioneer has started building other citizens will build alongside either by invitation or just to be close to other people.

It is evident from **figure 2a** that a large amount of AlphaWorld's expansive green plain remains undeveloped, with no glow of human activity. Only a tiny percentage of the AlphaWorld's land contain any building. There is clearly still plenty of room for expansion, although the much sought-after land in the centre of the world, as close as possible to GZ, is now heavily developed. With so much space available, AlphaWorld is very under-populated compared to most real-world countries. There are currently about 30,000 different people who

have built something in the world, taking this as the resident population of AlphaWorld, this gives a density of just 0.07 people per square kilometre.

Figure 2b shows a much more detailed map of a small area of the GZ city. At this resolution, the map is like an aerial photograph where it is possible to discern roads and individual buildings. The maps in **figure 2** were produced by the Vevo project, which has developed a sophisticated mapping system, using a quadtree structure, that is capable of producing maps of AlphaWorld at twelve different resolutions using the server database that hold data on the location of all objects in the world. The multi-resolution maps can be interactively browsed from their Web site at http://awmap.vevo.com/ and the highest resolution map can actually be used as a powerful teleportation tool. By clicking on a desire location on the map, you will then be instantly transported there in the ActiveWorlds browser.

What does the whole of the city at GZ look like? Well, Roland Vilett, one of the AlphaWorld programmers, has produced two gloriously detailed colour "satellite" maps of the city (Vilett 1998). **Figure 3** shows these for two snaps-shots in time (December 1996 and February 1998). They vividly reveal the organic complexity of the urbanisation caused by the unplanned action of thousands of real users. It can be clearly discerned that the most intensive urban development has taken place in the centre of the maps, which is around Ground Zero. The extent of urban development, spreading out from GZ, in this period of just over a year is apparent by comparing the two maps. Both maps cover the same area of AlphaWorld from 1000N, 1000W to 1000S, 1000E, a four hundred square kilometre tract of land. This represents a mere 0.3 percent of the total extent of the world, although it does contain a large proportion of the building. In the maps, particularly the first created in December 1996, the star-shaped urban development along the compass axes is clearly evident. A year later the star shape is dissolving as fill-in development in the desirable land around GZ continues apace. The dark green areas on these maps is unclaimed land.

Immigrating to AlphaWorld

When you enter AlphaWorld for the first time you go through an immigration procedure, but Damer as reassures us "*Don't panic, immigration into this virtual world is much easier than crossing national boundaries!*" (Damer 1997, page 107). You can choose to enter the world on a tourist visa or you can apply for citizenship, which grants you several important rights.

To gain AlphaWorld citizenship requires the payment of a fee (currently $19.95 a year) to the owners Circle of Fire Studios. It is interesting that the people who run AlphaWorld use real-world metaphors of immigration and citizenship in relation to access to their virtual world. The introduction of differential rights between tourists and citizens, when the fee was instigated in September 1997, has given rise to a two-tier social structure of "insiders" and "outsiders" which has impacts on the community in AlphaWorld (Schroeder 1997). Before the fee was introduced, everything was free and everyone was essentially equal. Now, AlphaWorld citizenship buys you the right to choose your avatar from a wide range of available ones, to own land and build on it and also send telegrams to other users. As a tourist you are free to wander around and engage in conversation, but you are stuck with the default "tourist" avatars and you can not build permanent structures. Tourist can be treated differently and unfavourably by citizens, although it is difficult to determine how widespread this is. Just like in the real-world the "locals" can be unfriendly to tourist and as Schroeder notes "*…tourist are immediately identifiable; they have single 'standard issue' avatar - with a camera hanging from their shoulders!*" (Schroeder 1997, paragraph 5.5). **Figure 4** shows examples of citizen and the standard tourist avatars. There are also more subtle differentiation between citizens with the age of your citizenship being indicated by how low an ID numbers you have. The lower the number, the more of a pioneer you were, arguably conferring a degree of kudos and status in the world. Social stratification is also played out in spatial terms, with 'newbies' tending to cluster at GZ whereas the 'regulars' are more wide ranging, exploring more of the territory and holding meetings and events at specific locations (Schroeder 1997). This is due to their greater familiarity with the system and what is available in the world - they know the good places to go. Also, regulars often have built homesteads that they can invite people to visit, a facility denied to tourists.

When you immigrate to AlphaWorld you are required to choose a nickname that is unique in AlphaWorld. This contributes to the construction of a virtual identity which can often be quite different from your real-world persona. The selection of an avatar also adds to this, as it perfectly possible to choose a body form of a different race or gender. The nicknames of people present in AlphaWorld at any given time clearly show that many are taken from favourite characters in literature, TV, films and games. The construction of virtual identities has been noted by other researchers looking at various computer-mediated communication systems, particularly text-based MUDs (see for example the work of Turkle 1995, Curtis

1996, Donath 1998). The allocation of citizenship also requires you to provide a valid email address. This is for practical communication purposes, but it also, arguably, instils some degree of social responsibility on users, knowing that they are not totally anonymous (Damer 1997).

To what degree are the users of AlphaWorld really citizens in a new world with inalienable rights? The constitutional position of citizens can best be described as vague and I would argue they are really just consumers, despite all the immigration rhetoric. When you immigrate to AlphaWorld you are really signing up to a consumer contract with the world owners, Circle of Fire Studios, Inc. To use their software you must agree with their license which entitles you to certain activities. There is evidence that some users are unhappy with the nature of their rights under this agreement and how the world is managed. There have been accusation levelled against Circle of Fire Studios of arbitrary use of their powers in regard to ejecting and banning people from AlphaWorld. These rumblings of discontent are reported in various online newsgroups for discussion of AlphaWorld. It could be that some of the AlphaWorld old-timers have become frustrated by the changes they see being imposed on their world, for example the introduction of the citizen fee and increasing commercialisation, that they have no control over.

The use of powerful real-world metaphors of immigration, citizenship and homesteading mask the reality that AlphaWorld is really a privately owned themepark to which you can a ticket (citizenship) that allows you to build new rides and chat to the other customers, but the management of the park have the right and power to refuse entry, throw you out and ban you when they feel you have broken their rules. You have no means to independently challenge the management's actions. In this sense, AlphaWorld is not a wild-west frontier, rather it is more like a Disneyesque FrontierLand. Internet virtual worlds like AlphaWorld can been seen as another an example of a privately owned and operated semi-public spaces designed for consumption, just like shopping malls and themeparks in the real-world (Sorkin 1992, Graham & Aurigi 1997). The true nature of AlphaWorld as a semi-public space was eloquently spelt out by the following message posted on the AlphaWorld community newsgroup by user 'retsmah' under the subject heading "its a corporation not a country":

> "*i think what most of the people are forgetting is the cof* [Circle of Fire Studios, Inc.] *is a corporation not a country…therefore they can run it any way they want…and they*

dont have to listen to the consumer unless they choose to.. for some reason people seem to think that it is a country, and a free country at that.. well hate to burst the bubble but it is not..aw [AlphaWorld] *is a software program owned by a company.. if you dont like how they run the company dont use the software…i mean i hate coca cola.. but i dont try to tell them how to run the company hahahaha.*" (Retsmah 1998).

Just like themeparks and shopping malls, AlphaWorld has its own private security cards, called Peacekeepers. Their job being to maintain order and prevent disruption to other customers. To achieve this they have the power to instantly eject people and then ban them for varying lengths of time from returning to the world.

Building in AlphaWorld

Undoubtedly, one of the main attractions of AlphaWorld compared to competing virtual world systems has been the ability of its users to construct things in the world. Building in AlphaWorld is much like using a Lego construction set. The world was conceived with the means to allow users to build and this has proved to be popular. As we have seen earlier, the citizens have built a huge, sprawling city in the centre of the world, along with many smaller settlements and isolated homesteads out in AlphaWorld's expansive prairie.

The first step in building is to locate a plot of empty land that is not owned by anyone else. This can be difficult if you want to building anywhere near GZ due to the density of existing urban development, however, there is still plenty of land further out. Once you have found some suitable vacant land you can claim this territory for your homestead by simply building on the ground. There is no limit to how much land you can claim. However, it is important to cover every acre you own with buildings or gardens, otherwise others can build in your backyard. This gives rise to building disputes, one of the major sources of conflict in AlphaWorld.

Building is undertaken with predefined objects, much like virtual Lego bricks, such as road sections, walls panels, doors, windows to flowers and furniture. In total there are over one thousand different objects and you put them together piece by piece to create larger structures. The ActiveWorlds browser provides rudimentary tools to select and manipulate the objects, putting them in a desired position. Construction of large buildings, using hundreds of

individual objects, requires a considerable amount of skill and effort. It appears that AlphaWorld is providing a powerful new medium of personal self-expression which is denied most people in the real-world. How many people have the time, money and skills to build their dream home in the real-world? Well, many thousands have been able to become architects and builders in AlphaWorld and Damer claims that "*Within two years, … home users had built more three dimensional virtual space than all the laboratory and university virtual reality environments combined.*" (Damer 1997, page xx). The views in **figure 1** and the detailed map in **figure 2b** shows typical AlphaWorld construction.

As with a Lego set, you can only build with the pieces provided. It is not possible to create your own objects in AlphaWorld. This means the built environment of AlphaWorld has a somewhat homogenous appearance as everyone has to use the same materials. Despite this limitation, the individual creativity of the citizens has constructed all manner of interesting structures, some well-designed and aesthetically pleasing while there are also equal measures of ugly and half finished structures. The homesteads that people build in AlphaWorld are analogous to the homepages that people create on the Web, rather than private homes of the real-world. Both homesteads and homepages are tangible expressions of presence in the online world, serving as fixed points of reference in an ever changing landscape. They are both made publicly available, to be examined without your express knowledge or invitation. Jeffrey & Mark comment, "*Building a home provides an opportunity to showcase one's craftsmanship, and create a feeling of ownership as the home is a territorial marker for a virtual habitat.*" (Jeffrey & Mark 1998). They both require an investment of time and effort to build properly and maintain. AlphaWorld citizens list the co-ordinate location of their homesteads in the same way people give the Web address of their homepage. Finally, both forms of virtual expression suffer the same problems of poor design and "build and abandon".

From my informal observation of the structures which users have built in AlphaWorld it is clear that they are firmly rooted in peoples everyday experience of real-world places. Many homestead designs match familiar architectural forms and layouts despite the complete freedom of the virtual world to stretch and warp the conventional architectural notions of the material world. For example, it is perfectly possible to build abstract structures floating in mid-air and other architectural designs that would be impossible with real-world building materials and the force of gravity. Yet, most people seem stick to building more conventional

homesteads, with walls, a roof and a frontage facing onto the road. This is in part encouraged by the types of building blocks provided, but I think it is also due to a powerful need to create places that are in some senses familiar and 'real'. People also have difficulties navigating structures in three dimensions that disobey to many of the conventions of real-world architecture. A more detailed and systematic study of the architecture of AlphaWorld could be revealing about how people are adapting virtual space to create places that have meaning in their lives.

The local urban morphology of the city around GZ is, not surprisingly, chaotic and disorganised because it has grown over time from the efforts of lots of individuals with no central co-ordination. In AlphaWorld there are no building controls or planning zones. I would argue that AlphaWorld's towns can be viewed as similar to the informal squatter settlements that surround many rapidly urbanising cities in the third world. These settlements are unplanned and built by the residents themselves from whatever materials they have to hand.

There have been several attempts to form specific communities in AlphaWorld by planning and build an actual township. The most well documented of these has been the Sherwood Forest community project run by the Contact Consortium (Damer 1997, Contact Consortium 1998). The project commenced in early 1996 and had a formal charter and a town plan (**figure 5**). In many ways the community activists of the Sherwood Forest project were aiming to recreate a utopian, Californian-style, suburban township (Kling & Lamb 1996). Another good example is Pink Village, a gay and lesbian community, which has bars, cafés, a night club, a town hall, remembrance gardens, a museum, galleries, as well as 'private' homes (Pink Village 1998). The community is active with a local newspaper, a calendar of social events including a pride festival, and an elected village council.

The unique facility of AlphaWorld to allow uncontrolled and unplanned building by users also provides a fascinating new avenue for aberrant behaviour in the virtual world known as virtual graffiti and vandalism. Even though the software prevents anyone but the owner of the land changing a building, vandalism is possible by deliberately placing objects as close as possible to other people's homesteads. A small number of users appear to take pleasure from this, using annoying objects, like flames, bogus teleports, and even large billboards with offensive pornographic pictures on them, placed right in front of the entrance to people's homesteads.

Figure 6 shows an example of virtual vandalism, where a large animated flame has been maliciously placed inside the fenced property of someone else (Damer 1997). The owner of the land can not move the flame, so has responded in the only way possible by placing a large placard requesting the perpetrator to remove the offending object. Interestingly, the flame object appears to be used as a physical equivalent of a flame email. This type of vandalism is viewed as the serious 'crime' in AlphaWorld because of the importance citizens attach to their homesteads and directly led to early community action with the formation of the AlphaWorld Police Department to counter a this anti-social behaviour (Damer 1997). However, there is little people can do as it is very difficult to get vandalism removed. It is not clear how widespread it is or whether they are random acts or a more concerted campaign against certain properties.

Travel and Time in AlphaWorld

The physical movement of avatars in AlphaWorld is greatly enhanced compared to how humans can move their bodies, unaided by machines, in the material world. The nature of space and time is being warped in the virtual world by the superhuman powers of the avatar. By default, when you enter AlphaWorld your avatar walks along the ground. However, it is just as easy to fly up in the air as it is to walk on terra firma. Flying requires no greater effort or special equipment, you simply press the + key and up you go. In fact, it often easier to travel by flying because you can see better where you are going, so for many users flying is the preferred means of movement. It is also perfectly possible and acceptable to hold a conversation while floating in mid-air.

To travel any distance by walking or flying quickly becomes tedious. As there are no cars, trains or planes in AlphaWorld citizens use teleportation to get around. Teleportation in AlphaWorld works just like it does in sci-fi films. Your avatar is instantaneously transported to a specified location, with the accompaniment of suitable "beaming" sound-effect. Teleportation has seriously warped the concept of distance and geographical accessibility as any location in the 429,000 square kilometre expanse of AlphaWorld can be reached instantaneously from any other point, at no cost in terms of time or money. Consequently, every point in AlphaWorld is equally accessible, this is truly the death of distance (Couclelis

1996, Cairncross 1997). The ability to teleport is a powerful feature, however it was not available at the beginning of AlphaWorld's history. It has only been progressively introduced for fear of its affects on the world. As the AlphaWorld newspaper reported in November 1995:

> "*Teleportation! Yes Teleportation! The one most common request of AlphaWorld citizens has been teleportation… With teleportation more of AlphaWorld will become readily accessible. There is still some concern that teleportation will ruin the simulation of reality in AlphaWorld.*" (NWT, Issue #4, page 2).

The tyranny of distance may been rendered obsolete by teleportation, but the importance of geographic location is alive and well. When people are choosing a location to visit or, more importantly, a place to build their homestead they want a *good* location. In the real-world the factors that determine a good location vary from place to place and person to person (e.g. a good view, away from the noisy airport or near a good school). In the context of AlphaWorld a good location is determined by two main factors, firstly, being as close as possible to Ground Zero, the centre of the world. Secondly, having a location with memorable co-ordinates, for example the Pink Village is located at 2222S and 2222E.

Navigation in AlphaWorld is made extremely difficult because visibility is limited by the browser so it is only possible to see a maximum of 120 metres in any direction. (The default setting is half this distance). So despite the vast expanse of space in AlphaWorld, you never really get a sense of this scale as you can never see distant landmarks for example. The constrained visibility is a practical necessity to restrict the amount of 3-d environment that has to be rendered so the software can maintain a usable frame-rate on average PC hardware. However, the effect on your perception of geographic space is really quite unnerving, it is like walking around in an opaque bubble 120 metres across and it takes some getting used to. The problem is that streets and buildings appear to end, with a sharp cut-off line at the edge of the visibility bubble. This impacts on local accessibility because it is hard to orientate and navigate with no fixed landmarks and distant vistas. When this visibility limitation is combined with the use of teleportation to exact locations, the effect is to prevent you building up a mental map of city as you do not learn the geographic context of features and the spatial relations between them. The practical impact is to make it very hard to find buildings and features of interest unless your know their exact x and y co-ordinates.

As well as warping space and distance, AlphaWorld also exists in its own time zone called AlphaWorld Standard Time. The need for a special time zone arose because of the difficulty of scheduling meetings and events with people from all around the world; confusion often occurred as people tried to agree a mutually convenient time and then convert it into their local time. Consequently, a group of AlphaWorld activists designated Greenwich Mean Time minus two hours as the standard for AlphaWorld in November 1996. This time-zone, known as mid-Atlantic, is not used by any countries in the real-world. Subsequently, this has been adopted by other virtual communities who communicate in real-time, with the time zone recently being renamed Virtual Reality Time (VRT for short). In the latest version of the ActiveWorlds browser software, VRT is displayed on the status bar, so citizens need never be confused about the time in AlphaWorld. The existence of virtual worlds in their own time zone helps to make them more like real places.

Avatars and Identity

The role of the avatar, in providing a tangible, representative form of the user, is a crucial element that distinguishes virtual worlds from other computer-mediated social spaces such as Usenet and IRC (Rossney 1996). The avatar as a bodily presence in virtual space provides a focus for conversation and social interaction. Avatars can talk to each other which has the effect of enabling a kind of face-to-face communication between users.

The selection of the avatar is also important in the formation of the virtual persona, just like the physical body is at the core of our real-world identities (Suler 1997, Donath 1998). The development of online virtual identities that differ from real-world identities has been a topic of considerable social science research. In addition, the role of the body in cyberspace, the potential for intellectual disembodiment and transcendence of flesh and bone has also interested researchers (Stone 1991, Featherstone & Burrows 1995).

In AlphaWorld, registered citizens can choose from a list of thirty-odd available avatars. **Figure 4** shows several typical AlphaWorld avatars. Unlike other virtual world systems, such as the Palace, you are not able to create your own unique avatar (Suler 1997), which does limit this avenue of personal expression. All the AlphaWorld avatars are based on conventional human body shapes unlike many other virtual worlds which have avatars more obviously

aimed at the entertainment market using cartoon-style characters or inanimate shapes. All AlphaWorld's avatars have a similar "look" and I think they resemble virtual versions of Barbie and Ken. They attempt to model some movement with articulated arms, legs and head, along with some limited facial expressions. Avatars move in a simulated walking motion and a number of pre-programmed actions are possible such as "dance", "wave", "anger" (a wave of the fist). Some have argued that avatar gesturing will bring some of the depth and nuances of non-verbal communication, that is so vital in the real-world, to the textual conversations in virtual worlds (Rossney 1996). Although this does not seem to be the case in AlphaWorld as the gestures are not widely used (Jeffrey & Mark 1998). The only time gestures are really used is to simulate avatar dancing at parties (Damer 1997). Instead feelings and emotions are conveyed through short text messages used for conversation.

Conversing in AlphaWorld is achieved by typing short sentences in a panel at the bottom of the ActiveWorlds Browser. These messages then appear in sequence in the chat-box, scrolling up as other people "speak" and also floating above your avatar's head. Like voice conversations in the real-world, you can only "hear" people talking in your immediate vicinity and if too many people try to speak at once it can be difficult to follow the conversation. Conversing using short-typed messages is of necessity direct and "chatty" in nature. Indeed, it has been observed that this has given rise to new conventions of language unique to real-time text-chat, with prevalence of abbreviations and acronyms (like "LOL" for laugh out loud or "BRB" for be right back) to represent frequently used phrases, to minimise the amount of repetitive typing and help maintain the speed of conversation (Menges 1996, Suler 1997). In addition, these abbreviations act as a shared dialect which helps to define the particular character and distinctiveness of the virtual community. Other distinctive features of this mode of communication include the use of emoticons (e.g. :-)), action phrases ("Martin Smiles"), heavy punctuation ("….???"), capitalisation ("SCREAM!"), and onomatopoeia ("hehehe") to express feelings and emotions that are normally conveyed by body language and tone of voice in spoken conversation. This can be combined with avatar movement and gesturing to create some of the depth of real conversation.

Selection of the avatar is from a menu listing with each one having a unique name. Citizens can change their avatars at any time simply by clicking on the name of their choice, they instantly assume that avatar shape in the world. Its goes without saying that the avatar

someone has chosen may not have any relation to their real-world bodily appearance. The ease and freedom of avatar selection, arguably, encourages well known identity deceptions that occur in online social interaction such as gender-swapping, race shifting and exaggeration of physical characteristics (Donath 1998). One needs to be aware that avatars are powerful means of *mis*representation as well representation in virtual worlds.

It is apparent that users in virtual worlds both consciously and unconsciously use their avatars as they would a physical body. The best example being the convention of facing your avatar to "look" at the avatar you are talking to; the need to make eye-contact is obviously important in virtual conversation although it is not technically required by the software. This is largely because the world is presented in first-person perspective through the eyes of the avatar. When people talk in groups they tend to arrange their avatars in a loose circle, all facing each other. The avatar seems to exhibit the same sense of personal space that bodies do in the real-world. From their observations, Jeffrey & Mark state, "*Although physically possible to pass through avatars, it was seen as rude and impolite and this behaviour was not observed very frequently.*" (Jeffrey & Mark 1998). So people tend to walk their avatars around others, rather than go straight through. Indeed, the sanctity of personal space around your avatar means unwarranted and deliberate attempts to invade it can feel threatening and are known as avabuse (Damer 1997). The potential for many kinds of anti-social behaviour exists in computer-mediated communication from annoying pranks to deeply offensive verbal abuse and threats (Dibbell 1996). This is often encouraged by the veil of anonymity that the computer provides. The extended environment of virtual worlds, particularly the avatar representation, gives people new opportunities and avenues for abusive behaviour that go beyond the verbal to physical blocking, shadowing and stalking (Suler 1997).

To try and counter the social problems of verbal abuse, avatar assaults and virtual vandalism an organised system of policing by volunteer 'security guards' under the direction of the world owners, Circle of Fire Studios, was instigated. Their concern, running the world as a commercial venture, is that offensive behaviour discourage visitors from registering as citizens. One class of control is provided by so called Gatekeepers who have the power of ejection, although their primary role is to welcome new users and provide assistance. However, from their guidelines state that they *also* "*have the right and power to maintain the levels of decency that you and I would expect in the real world*" (Gatekeepers home page at

http://www.colony.co.uk/pages/gatekeep.htm), whatever the level may be. The 'proper' AlphaWorld police are called Peacekeepers and there role is more wide ranging being able to patrol the world and try to intervene to prevent verbal abuse, investigate stalking and incidents of vandalism and they have the powers of ejection and banning (see http://www.activeworlds.com/Peace.htm). They are organised with a duty roster to provide continuous police cover. Some users have expressed serious concerns over how the Peacekeeper role is executed, with accusations of heavy-handed policing with summary expulsions, and an inadequate appeals systems.

Another interesting feature of avatar interaction in AlphaWorld is the power to mute people. Just like a television remote control it is possible to mute the conversation of other users by clicking on their avatar and selecting the appropriate option. You will no longer "hear" their words. In this virtual world one can really ignore people you do not like with a simple click of the mouse. This type of personal censorship power is taken further with the ability of Peacekeeper to physical eject and then exclude people from the world as we discussed earlier.

Finally, the avatar play an important role by providing the "human" scale in AlphaWorld with objects like windows, doors, stairs and furniture being appropriately sized. Buildings and other structures are scaled to the avatar height, just like the much of man-made environment of the real-world is built for the scale of human body. Avatars can also dispense with hassle of the real-world convention of doors as it is possible to walk through walls by simply holding down the shift key. AlphaWorld encourages the construction of a built-environment with solid walls using the metaphors of the material world, however it also provides superman like powers to shatter the illusion and allow avatars to effortlessly glide through structures, and many people do use this feature. Avatars in AlphaWorld do truly provide god-like powers to mortal users.

Conclusions

Virtual worlds systems, like AlphaWorld, are providing fascinating new social spaces that exist only in Cyberspace. Geographers can make valuable contributions to understand the spatial structure, development and use of these spaces. One area seems especially ripe for investigation by geographers is how the individual actions and the social interactions of the real people can transform cold, computer-generated virtual spaces into meaningful, humane

virtual *places*. In AlphaWorld, the activity of building homesteads to your own designs that are persistent is vital to this transformation.

Some of the key themes that I have explored in relation to AlphaWorld in this paper are the geographic structure of the virtual space, the growth of urban development, how users build and the meaning of their homesteads, the important role that the avatar plays in virtual worlds, the problems of anti-social behaviour, the warping of the notions of geographic distance and accessibility by the nature of movement and travel.

In this paper I have taken a fairly positive view of AlphaWorld. However, there are problems and weaknesses with virtual worlds, including AlphaWorld. From my exploration I believe the key problem is the very severe under-population. There are simply not enough people using most of the virtual worlds to make them interesting, engaging and self-sustaining social environments. All to often you enter a virtual world and find yourself alone. After wondering through empty street and buildings for a while you usually give up as there is nothing to do! These spaces only come alive when there is a real throng of people around to talk to. This population problem is also suffered by the Active Worlds system where the vast majority of the worlds are devoid of people and therefore effectively dead. Even AlphaWorld, the most popular and active, is lacking in people when you get beyond the immediate surroundings of Ground Zero and it is easy to wander through ghost-towns with not a soul around. Virtual Worlds are still a real minority activity on the Internet compared to other real-time social spaces like ICQ or games.

For me the key question is whether the apparent failure of virtual worlds to attract a large user population is due to a fundamental weakness with the virtual world concept or simply to due to technical failures by the companies implementing and marketing the current systems. In some senses, this question could apply to the larger VRML and VR ‘projects’ which have, so far, failed to make the dramatic impact on the way people use computers and the Net that was predicted. I am not sure what the answer is, but I think the spatial sciences have an important contribution to make in investigating the question. Therefore, by way of conclusion, I would like to encourage you to take a little time to download the ActiveWorlds browser and take a wander around AlphaWorld (and some of the other worlds) for yourself, talk to some of the

residents and visitors, experiment with flying and teleporting, and maybe have a go at building. Let me know what you think of the geography of this virtual world.

[1] Some notable exceptions include the papers by Hillis 1996, Taylor 1997, Batty et al 1998.

[2] The wedding took place in May 1996 and Damer recounts, *"Citizens floated their avatars down the aisle, crowded the altar to witness the words "I do" from both the bride and groom, and then floated in around the couple to wish them well. …. When the bride tried to toss her bouquet, she discovered that it was permanently glued to her avatar. Immediately after the wedding, the groom drove 3,100 miles from San Antonio, Texas to Tacoma Washington to kiss his bride."* (Damer 1997, page 134).

[3] For example there is the AlphaWorld Historical Society, with a museum. <http://www.awcommunity.org/awhs/>. The is also a 'national' newspaper called the New World Times (or NWT for short), run by AlphaWorld citizens. The first edition of the NWT was published only a couple of months after AlphaWorld opened, with regular editions since then. An archive of all editions is available on the Web providing valuable historical documents (NWT 1998).

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Figure 1 : Various views of AlphaWorld

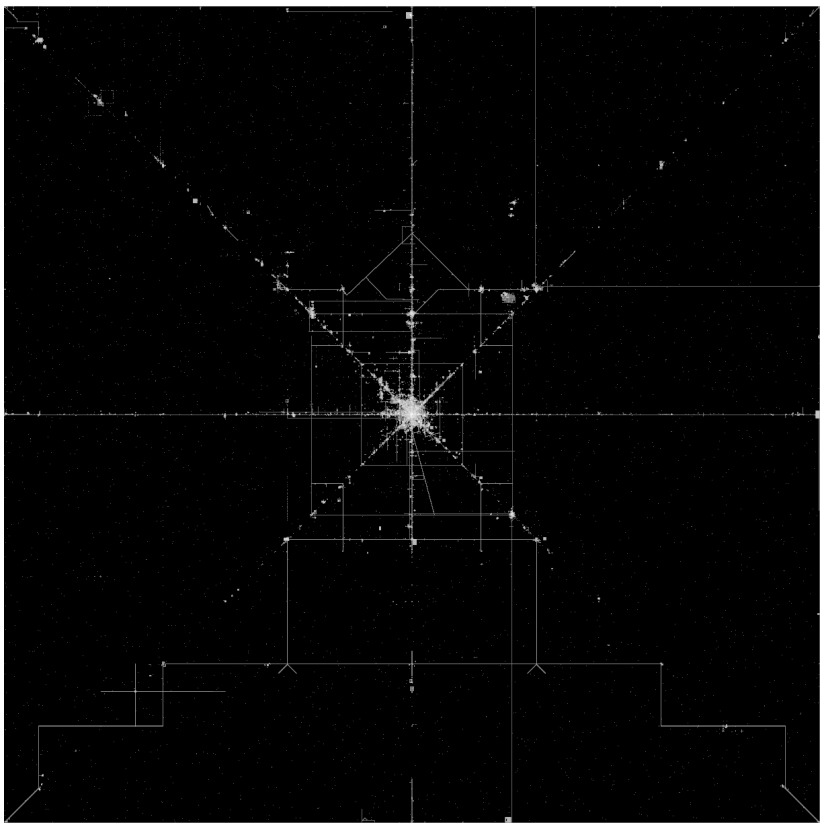

Figure 2a : Density of building in Alphaworld
on 23rd February 1998, produced by Vevo.
(Source : http://awmap.vevo.com/densmap.html)

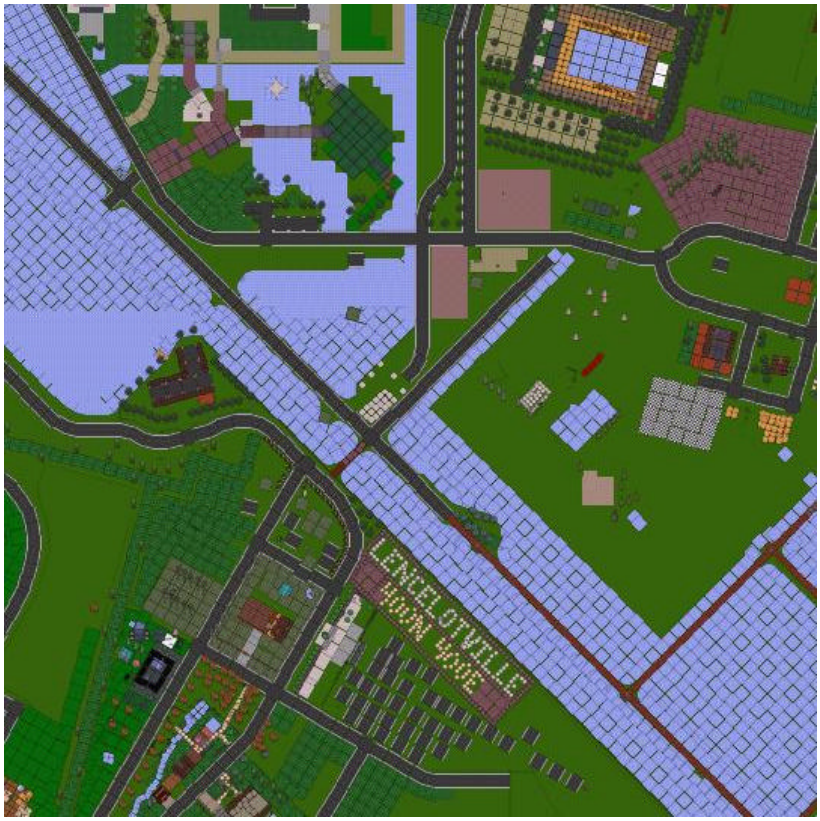

Figure 2b : Detailed “aerial-photo” style map of AlphaWorld
(Source : http://awmap.vevo.com/)

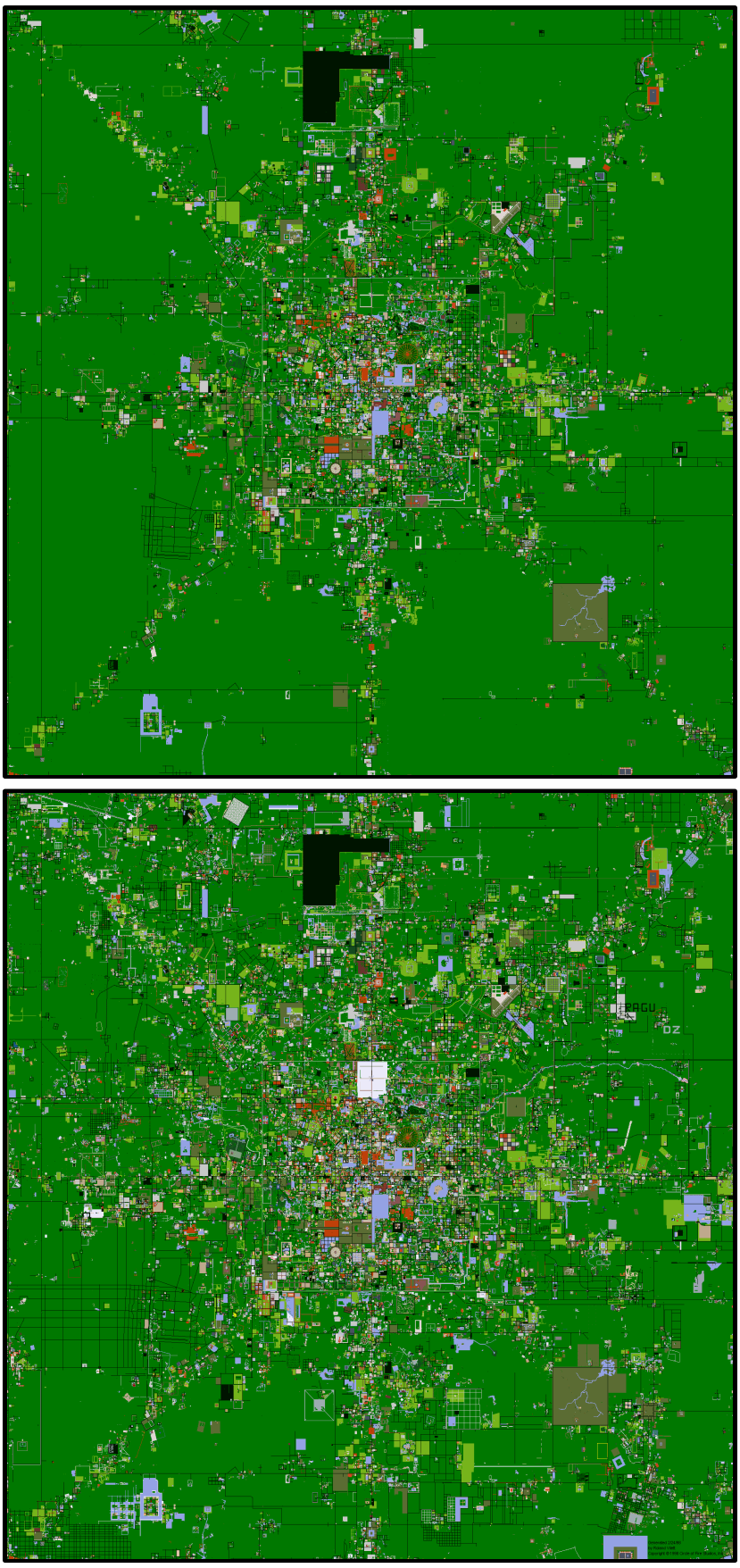

Figure 3 : AlphaWorld “land-use” maps created by Roland Vilett from December 1996 (top) and February 1998 (bottom). (Source : http://www.activeworlds.com/events/satellite.html)

Figure 4 : Typical AlphaWorld avatars,
the one on the right is a tourist one.

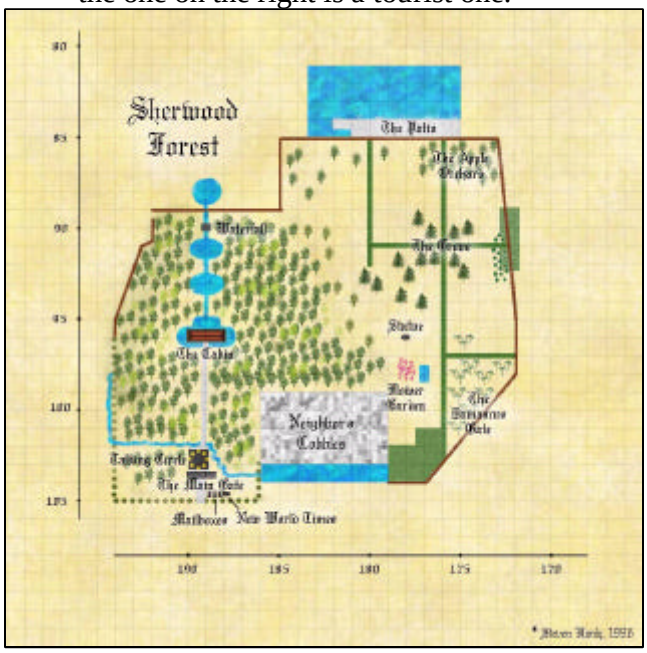

Figure 5 : Sherwood Forest community project town plan.
(Source : http://www.ccon.org/events/sherwood.html)

Figure 6 : An example of vandalism.